

Broad Agency Announcement

Probabilistic Programming for Advancing Machine Learning (PPAML)

DARPA-BAA-13-31

April 1, 2013



Defense Advanced Research Projects Agency

675 North Randolph Street

Arlington, VA 22203-2114

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Part I: Overview

- **Federal Agency Name:** Defense Advanced Research Projects Agency (DARPA), Information Innovation Office (I2O)
- **Funding Opportunity Title:** Probabilistic Programming for Advancing Machine Learning (PPAML)
- **Announcement Type:** Initial Announcement
- **Funding Opportunity Number:** DARPA-BAA-13-31
- **Catalog of Federal Domestic Assistance Numbers (CFDA):** 12.910 Research and Technology Development
- **Dates:**
 - Posting Date: see announcement at www.fbo.gov
 - Solicitation Closing Date: May 16, 2013, 12:00 noon (ET)
 - Proposers' Day: April 10, 2013
- **Anticipated Individual Awards:** DARPA anticipates one award for Technical Area 1 and multiple awards in Technical Areas 2-4.
- **Types of Instruments that May be Awarded:** Procurement contract, cooperative agreement, or other transaction.
- **Technical POC:** Dr. Kathleen Fisher, Program Manager, DARPA/I2O
- **BAA Email:** PPAML@darpa.mil
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- **I2O Solicitation Website:**
http://www.darpa.mil/Opportunities/Solicitations/I2O_Solicitations.aspx

Part II: Full Text of Announcement

I. FUNDING OPPORTUNITY DESCRIPTION

DARPA is soliciting innovative research proposals in the area of probabilistic programming languages and accompanying tools to facilitate the construction of new machine learning applications across a wide range of domains. Proposed research should investigate innovative approaches that enable revolutionary advances in science, devices, or systems. Specifically excluded is research that primarily results in evolutionary improvements to the existing state of practice.

This broad agency announcement (BAA) is being issued, and any resultant selection will be made, using procedures under Federal Acquisition Regulation (FAR) Part 35.016 (DoDGARS Part 22 for Cooperative Agreements). Any negotiations and/or awards will use procedures under FAR 15.4, Contract Pricing, as specified in the BAA (including DoDGARS Part 22 for Cooperative Agreements). Proposals received as a result of this BAA shall be evaluated in accordance with evaluation criteria specified herein through a scientific review process.

DARPA BAAs are posted on the Federal Business Opportunities website (<http://www.fbo.gov/>) and the Grants.gov website (<http://www.grants.gov/>). The following information is for those wishing to respond to the BAA.

Introduction

Machine learning is at the heart of modern approaches to artificial intelligence. The field posits that teaching computers how to learn can be significantly more effective than programming them explicitly. This idea has revolutionized what computers can do in a wide range of domains, including Intelligence, Surveillance, and Reconnaissance (ISR), Natural Language Processing (NLP), Predictive Analytics, Cyber, and various scientific disciplines. Example applications include self-driving cars, image search and activity detection, object tracking, topic models, spam filters, recommender systems, predictive databases, and gene sequencing. Unfortunately, building effective machine learning applications currently requires Herculean efforts on the part of highly trained experts in machine learning. Probabilistic Programming is a new programming paradigm for managing uncertain information. The goal of the Probabilistic Programming for Advancing Machine Learning (PPAML) program is to facilitate the construction of machine learning applications by using probabilistic programming to: (1) dramatically increase the number of people who can successfully build machine learning applications; (2) make machine learning experts radically more effective; and (3) enable new applications that are inconceivable today.

Background

Machine learning applications work by building a model of a phenomenon of interest and then training or conditioning that model with observed data. The refined model is then used as a proxy for the phenomenon, making predictions, answering queries, or directing actions. The process of training and/or querying the model is called *solving the model* or *performing inference*. Constructing the model is partly about coding, specifying assumptions about how the world works, and partly about machine learning, refining the model in light of observed data.

Probabilistic models and associated inference techniques have become standard approaches for developing machine learning applications. Despite this success, creating machine learning applications that use probabilistic inference is difficult for a number of reasons.

1. Successful development requires a high level of expertise. There are more than 10,000 different inference engines described in the literature and researchers publish hundreds more every year. Deciding which such engine is appropriate for a particular task requires advanced knowledge of the field. In addition, developing a model and the accompanying solver can require advanced skills in a variety of fields, including statistics and probabilistic modeling, approximation algorithms, high-performance software, and parallel and distributed computing. Consequently, most machine learning applications are built by teams of PhDs at significant cost.
2. Implementations tend to be brittle and there is a dearth of reusable tools, so machine learning applications are frequently written from scratch.
3. Inference engines are often painfully slow and can have unpredictable performance for various reasons, including the intrinsic complexity of inference algorithms, the amount of data they need to process, and the difficulty of realizing high performance when manipulating large graphs because of the lack of locality.
4. It can be difficult to construct appropriate models. The chosen inference engine can limit model vocabulary. The code to implement the model can end up intertwined with the associated solver code, making it difficult to inspect, maintain, or enhance the model. Domain knowledge can be difficult to incorporate, so applications often default to using generic statistical modeling assumptions rather than domain-specific ones.
5. Current machine learning systems are often siloed, either by application area or by solver technique, both of which have negative consequences. Application-area siloing means that it is difficult to use information from one domain, say speech recognition, to assist in learning about a second domain, say image processing. Solver siloing means that a user has to choose the appropriate solver up-front, which makes it difficult for non-experts to get started.

Collectively, these factors are slowing fundamental progress in machine learning and its applications.

A new programming paradigm for managing uncertain information, called probabilistic programming, offers a potential solution to these problems. In this approach, model

developers use the power of a modern programming language to build a model of the phenomenon of interest. When the model depends upon an unknown quantity, developers introduce a random variable that can be drawn from a wide range of different distributions. As a simple example, if developers were interested in modeling tug-of-war to assess the strength of individual participants given the results of team matches, they could build a model with the following elements: (1) the strength of each person is drawn from a normal distribution in a memoized fashion (so that a person's strength does not vary in time); (2) a person is lazy 10% of the time; (3) the pulling power of a person is half her strength if she is being lazy and otherwise is her full strength; (4) the pulling power of a team is the sum of the pulling power of the individuals on the team; and (5) the team with the greater pulling power wins.

Developers can separately specify in the language the queries of interest and any data known *a priori*. For example, they can indicate they are interested in Bob's strength, if he were one of the participants, given the results of a day's matches. It is the responsibility of the "compiler" for the language to find probable values for the random variables (in this case, Bob's strength) given the model, the specified query, and the prior data.

This approach has multiple advantages. It separates the model from the solver, making it possible for one set of users to develop the model without having to implement or know the details of the solver. The expressiveness of the programming language makes it easy to concisely specify rich models and improve them in an iterative, exploratory process. For example, it is straightforward to change the tug-of-war model to draw the strength of participants from different distributions, depending upon whether they are male or female. The model is also clearly separated from the query, so the same model can be used to ask multiple questions about the phenomenon under study (for example, "What is Mary's strength in addition to Bob's?"). The approach also enables independent library development, so end users can reuse common model elements in the same way that software developers can reuse common code elements.

The approach offers much the same benefits to the machine learning community that high-level programming languages offered to the software development community fifty years ago. Before the advent of high-level languages, developers had to understand both the desired application and the low-level details of the hardware on which the application was to run. Afterwards, application experts could focus on the application while hardware experts could embed their expertise in reusable compilers. This generality came at the cost of some run-time performance, but the huge increase in developer productivity more than made up for the cost. With the advent of effective probabilistic programming languages, developers will be able to focus on developing their models while solver experts will be able to embed their expertise in reusable inference engines. Applications written in such a fashion may suffer some run-time performance penalty over hand-written applications, but the huge increase in developer productivity and in the number of people who can build applications in the framework will more than make up for the cost.

Achieving this goal requires research breakthroughs in several areas. For the "front-end" of the system, (i.e., the portion of the system that application developers will see) these challenges

include answering the following questions: (1) how to balance the expressive power of the language with the corresponding difficulty of producing an efficient solver; (2) how to make the system maximally usable by users from a range of different backgrounds and skill levels; and (3) what kinds of profiling/debugging/model checking tools should the system have so end users can understand the performance and correctness ramifications of their modeling choices?

For the “back-end” of the system, (i.e., the portion of the system responsible for solving the models and answering queries) the key research challenge is improving system performance and predictability. Improvements on the order of two to four orders of magnitude over the state of the art are likely necessary to produce an effective system, with simpler models and those requiring less data likely to fall at the low end of the spectrum while richer models and those needing lots of data at the high end. Advances that are likely necessary to achieve this improvement include: (1) developing analyses that select the most appropriate solver or set of solvers given a particular model, query, and set of prior data; (2) improving the performance of existing solvers by incorporating ideas from the compiler optimization community; (3) compiling specific solvers to diverse hardware platforms in ways that optimize the resources of the hardware including multi-core machines, GPUs, cloud infrastructures, and potentially custom hardware; (4) developing new solvers; and (5) developing an API so that new solvers can be slotted into the solving infrastructure easily.

Program Description and Structure

The PPAML program has four technical areas (TAs), depicted in Figure 1. The TAs are:

TA1: Domain Experts

TA2: Probabilistic Programming

TA3: Machine Learning

TA4: Inference Engine

Proposers may address any of the four TAs, which are discussed further in the BAA document. To ensure independence and prevent conflicts of interest, proposers selected to perform any task within TA1 will not be selected as performers (prime or subcontractor) on any other technical area within the PPAML program. The decision as to which technical area(s), if any, to consider for award is at the discretion of the Government. See Section III.D.1 for additional information.

Program success will require a close and continued collaboration between experts from a range of fields, including but not limited to: programming languages, program analysis, compilers, machine learning, and a multitude of application domains. All performers under the PPAML program will be expected to work cooperatively with one another to develop, integrate, implement, test, and evaluate PPAML capabilities. Therefore, proposers should carefully review the expectations for all four TAs to fully understand the context of any TA(s) for which they will submit proposals. To facilitate the open exchange of information, performers may have an Associate Contractor Agreement clause included in their award. This clause is intended

to ensure appropriate coordination and integration of work by PPAML performers, while maximizing commonality and preventing unnecessary duplication of effort.

To evaluate the effectiveness of program technologies in supporting machine learning applications from multiple domains, program performers in TAs 2, 3 and 4 will be given Challenge Problems from a variety of domains throughout the program. Each system developed under PPAML will be evaluated on how well it performs on all Challenge Problems.

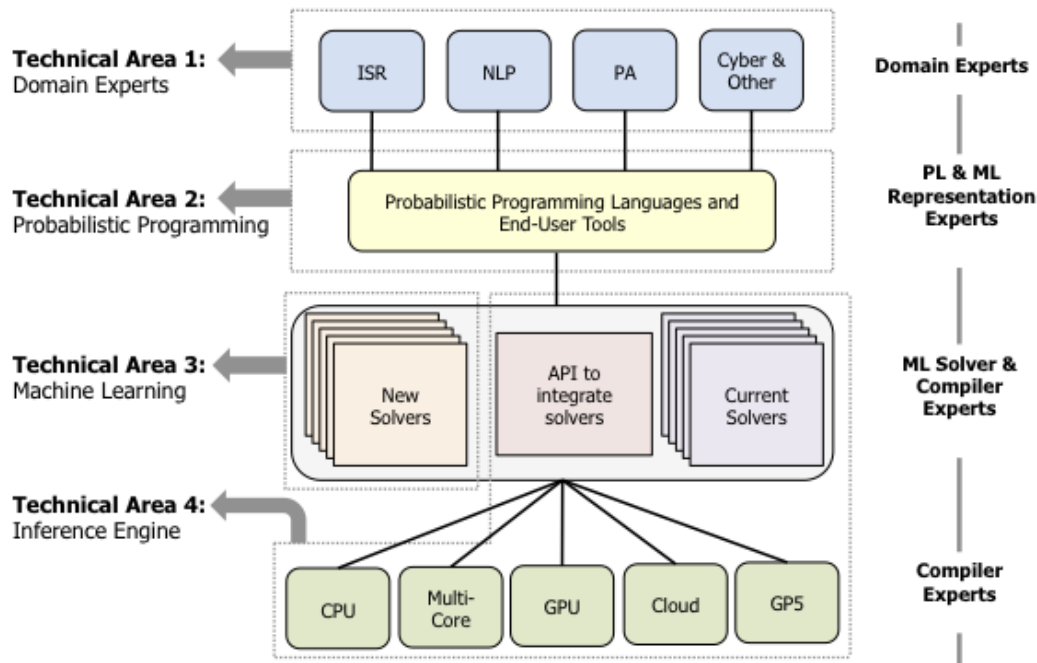


Figure 1. Program Structure

To evaluate the effectiveness of program technologies in enabling the rapid creation of new machine learning applications by domain experts, the program will include annual “Summer Schools” of two to four weeks in duration. These Summer Schools will bring together PPAML performers and potential customers from the Government and commercial sectors with the goal of enabling the customers to develop useful machine learning applications in their domain of expertise within the duration of the Summer School. As PPAML technology matures, the customers attending the Summer Schools should be able to work with greater levels of independence, with the end goal of requiring no assistance from PPAML performers.

Early in Phase 1, performers in TAs 2 and 4 will be grouped into one or more design teams, each led by a TA2 performer. Each such team will be responsible for producing before each Principal Investigator (PI) meeting and Summer School a complete end-to-end Probabilistic Programming System (PPS). This PPS should be suitable for use by TA1 performers for Challenge Problem evaluation and by Summer School participants for building machine learning applications in their domain of interest. Each PPS team is also responsible for identifying their own Team Challenge Problem that they will use to evaluate and demonstrate their system. Each TA3

performer may either be included on a specific PPS team or more generally support the collection of TA2 and TA4 performers as appropriate, depending on the nature of the specific TA3 effort. TA3 proposals should indicate the preferred arrangement. Performers may participate on more than one team, and the teams will not be competitively evaluated. There is no anticipated down-selection of either teams or individual performers in PPAML.

The program will emphasize creating and leveraging *open source* technology. Intellectual property rights asserted by proposers are strongly encouraged to be aligned with open source regimes. Exceptions for proprietary technology will be considered only in compelling cases. See Section VI.B.2 for more details on intellectual property.

Proposals should specifically list anticipated technical and programmatic risks and describe associated mitigation strategies. See Section IV.B.1.e.

Small, independent proposers are encouraged to propose to the BAA, as are agile teams from larger firms working alone or composed of industry-leading, special purpose, and (perhaps) short-duration sub-contractors. Non-traditional government service providers are encouraged to propose to this BAA, either on their own or in a teaming partnership with a firm who has experience in government contracting.

Technical Area 1: Domain Experts

The TA1 performers will be responsible for providing Challenge Problems to performers in Technical Areas 2-4, evaluating the effectiveness of each team's PPS in advance of each PI meeting, running the annual Summer Schools, and evaluating the effectiveness of each PPS at each Summer School.

A Challenge Problem is a specific machine-learning problem with a well-defined metric for evaluating the quality of solutions. The Challenge Problem must include a textual description of the phenomenon of interest, as well as the kinds of queries or actions that the machine learning system is supposed to infer. The Challenge Problem must come with associated data of appropriate size and quality, and the data must be unencumbered so that TA2-4 performers can access it freely and reference it in publications. TA1 performers are also responsible for having personnel who are experts in the domain of the challenge problem available for consultation with TA2-4 performers. In addition, TA1 performers must make available to all TA2-4 performers any infrastructure necessary for developing and evaluating the effectiveness of the solution. For example, if the Challenge Problem involves developing the control system for a robot, then the Challenge Problem must come with some kind of simulator so that TA2-4 performers can measure the effectiveness of their approaches. Particularly strong Challenge Problems will have multiple levels of difficulty that can be increased as the program progresses.

The TA1 performer is responsible for delivering three Challenge Problems at the program kick-off. To accommodate this tight time-line, the TA1 performer will have a period of performance starting one month earlier than the performers in other TAs. Subsequently, the TA1 performer is responsible for delivering a new Challenge Problem every six months, for a total of six

Challenge Problems in Phase 1, as well as two Challenge Problems each in phases 2 and 3. It is expected that Challenge Problems will grow in complexity, and the amount of data required will increase in later phases.

The set of Challenge Problems developed over the life of the program should represent a wide range of machine learning applications from a diverse set of domains. Some of the Challenge Problems should have existing solutions that enable head-to-head comparisons of traditional approaches to the approaches developed in PPAML in terms of both development and execution times. Other Challenge Problems should push the state of the art as to what is possible using machine learning techniques. Some, if not all, of the Challenge Problems should be made public to enable non-PPAML performers to benchmark their approaches with those of program participants. The TA1 performer should consult with the Government Team and consider feedback from TA2-4 performers and Summer School participants in selecting Challenge Problems beyond those defined at program kick-off. Proposals for TA1 should describe the initial three Challenge Problems in detail and the process by which additional Challenge Problems will be created.

The TA1 performer will be responsible for evaluating the performance of each PPS on each Challenge Problem, measuring both the quality of the solutions and the run-time performance. The TA1 performer will be responsible for writing a report summarizing each performer's results on all Challenge Problems. This report will be made available to all program participants, and these findings will be presented by the TA1 performer at each PI meeting. There will be three such evaluations during Phase 1, and two evaluations in each of phases 2 and 3.

Summer Schools provide an opportunity to evaluate how well domain-experts can use the systems developed in PPAML. The TA1 performer will be responsible for all aspects of organizing and running these events, including:

- identifying appropriate attendees and their associated machine learning problems;
- selecting and contracting with appropriate venues; and
- providing the necessary computing resources as well as access to relevant data sets.

It is expected that the TA1 performer will work closely with the Government Team in carrying out these activities. Some Summer School attendees may be selected through a competitive open call for participation. Summer Schools are expected to last between two and four weeks and occur between June and August. There will be one such school each summer. Cost proposals for TA1 should appropriately address these tasks and their associated costs, including travel support for some fraction of Summer School attendees.

The TA1 performer is responsible for evaluating the effectiveness of each PPS at each Summer School, measuring among other things: (1) the extent to which Summer School participants were able to use the tool effectively without interventions from TA2-4 performers; (2) the quality of the solutions produced during the Summer School; (3) the time required to produce an acceptable solution; and (4) the performance of each acceptable solution. During each

Summer School, excluding the first one, the TA1 performer may conduct human subject research to evaluate the experience of using the various PPSs developed by program performers. This research is expected to be non-invasive, to involve no risk to participants, and not to collect any personal identifying information so it would qualify for Level 1 Institutional Review Board (IRB) review. Proposals should include a description of how such research would be conducted and any protocols or procedures that must be followed to get approval for such research (also see Section VI.B.3). The TA1 performer is responsible for writing a report after each Summer School, summarizing the above findings. Such reports will be made available to all program performers in addition to the Government Team.

The TA1 performer will be responsible for maintaining a Wiki or similar on-line repository during the life of the program containing all materials related to Challenge Problems and Summer Schools, as well as fostering information sharing and collaboration amongst all program performers.

Technical Area 2: Probabilistic Programming

Each performer in TA2 is responsible for designing and building the “front-end” of a PPS that enables users from a range of skill levels to construct useful and performant machine learning applications from a variety of domains. This work includes designing a suitable, probabilistic programming language in which users can concisely express powerful models, as well as developing supporting infrastructure such as profilers, debuggers, and model verification/checking tools to help end users understand the performance, correctness, and accuracy consequences of their modeling decisions.

Anticipated additional research challenges in this area include, *but are not limited to*:

- Exploring trade-offs between (1) language expressivity and (2) the speed and predictability of inference;
- Exploring the use of embedded domain-specific probabilistic languages as a way to improve solver performance;
- Developing an intermediate representation suitable for transmitting information from the front-end of a PPS to the back-end in cooperation with TA4 performers;
- Developing interfaces with the PPS back-end to support profiling, debugging, and model checking/verification tools in cooperation with TA4 performers,
- Developing language pragmas to guide the inference engine as necessary in cooperation with TA4 performers,
- Developing a high-level graphical interface suitable for novices that gracefully transitions to a language interface as expressivity requirements increase,
- Building model libraries that contain common model components: Markov chains, deep belief networks, etc.; and
- Developing appropriate materials to train Summer School participants in tool use.

Individual TA2 proposals need not address any or all of these challenges.

Each TA2 performer will be responsible for leading a PPS design team, which will include at least one TA4 performer and zero or more TA3 performers. The goal of this team will be the production of a working, end-to-end PPS system in advance of each PI meeting. In this capacity, each TA2 performer is responsible for ensuring that the team completes a number of tasks, including:

1. Developing the Team Challenge Problem within a month after program kick-off;
2. Defining appropriate interfaces and common intermediate representations to enable smooth integration of technologies from all team members;
3. Producing a working version of the integrated system before each PI meeting and Summer School and delivering the working system to TA1 performers;
4. Demonstrating the integrated system on the Team Challenge Problem at each PI meeting;
5. Providing technical support to TA1 performers during their evaluation of the system on the program-wide Challenge Problems; and
6. Providing training and support to Summer School participants during each Summer School.

TA2 performers are expected to work with TA3 performers to incorporate novel algorithms, representations, and analyses discovered by the TA3 performers, as appropriate.

Technical Area 3: Machine Learning

Performers in TA3 are responsible for performing basic research in machine learning that is relevant to the goals of PPAML and supportive of performers in the other TAs. Proposals in TA3 should specifically address how the proposed research would fit within a PPS. As appropriate, TA3 performers will be encouraged to work on fundamental machine learning research problems that are identified by other PPAML performers in the course of the program.

Anticipated research challenges in this area include, *but are not limited to*:

- Developing the theory of the probabilistic programming;
- Discovering new inference algorithms that are more efficient, more accurate, more predictable, or more generalizable;
- Discovering novel representations that support more efficient, more accurate, more predictable, or more generalizable inference;
- Developing inference algorithms that work over streaming data or have better scaling properties; and
- Developing techniques for assessing model fitness for a particular data set.

Individual TA3 proposals need not address any or all of these challenges.

Each TA3 performer will either participate in a PPS design team or more generally support the collection of TA2 and TA4 performers. In either case, TA3 performers will help TA2 and TA4 performers integrate TA3 research results into program PPSs, as appropriate. If participating in a PPS design team, TA3 performers are responsible for working with their teammates to

accomplish the team tasks listed in the description of TA2. The most suitable role for each TA3 performer will be determined when the PPS design teams are formed.

Technical Area 4: Inference Engines

Each performer in TA4 is responsible for designing and building the “back-end” of a PPS that takes as input: (1) models written in a probabilistic programming language; (2) queries; and (3) prior data. Given this input, the back-end produces as output an efficient implementation with predictable performance. As part of this effort, TA4 performers are expected to develop inference engines that compile to a range of different hardware targets, potentially including multi-core machines, GPUs, cloud-based clusters, or novel hardware, making maximal use of the resources of each platform. Developing novel hardware is out of scope for PPAML; however, identifying custom hardware that would dramatically improve solver performance, if it existed, is in scope.

Anticipated research challenges in this area include, *but are not limited to*:

- Creating program analyses that determine the most appropriate solver or set of solvers given a model, query, and prior data;
- Developing an intermediate representation suitable for transmitting information from the front-end of the PPS to the back-end in cooperation with TA2 performers;
- Developing interfaces with the PPS front-end to support profiling, debugging, and model checking/verification tools in cooperation with TA2 performers;
- Incorporating information from language pragmas to guide the inference engine in cooperation with TA2 performers;
- Discovering how to integrate existing solvers to get maximal performance on a given problem instance;
- Improving solver performance by leveraging research from the programming language and compiler communities;
- Improving solver performance by leveraging the strengths of different kinds of hardware: CPU, multi-core, GPU, cloud, G5, etc.; and
- Defining an API for new and current solvers so that new solvers can be added as they are invented.

Individual TA4 proposals need not address any or all of these challenges.

Each TA4 performer will participate in one or more PPS design teams, providing the inference engine for that system. TA4 performers are expected to work with TA3 performers to incorporate the novel algorithms, representations, and analyses discovered by the TA3 performers, as appropriate. TA4 performers are responsible for working with their teammates to accomplish the team tasks listed in the description of TA2.

Schedule and Budgeting Information

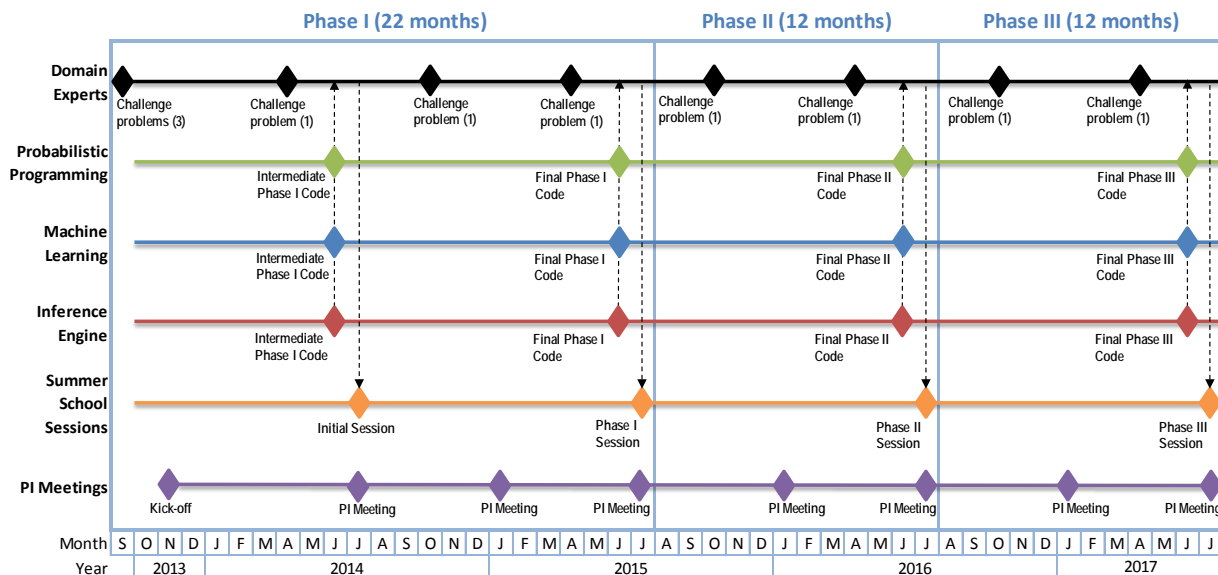


Figure 2. Program Schedule.

The schedule listed in Figure 2 contains notional estimates. Proposers should submit a detailed schedule that is consistent with the maturity of their approaches and the risk reduction required for their concepts. These schedules will be synchronized across performers, as required, and monitored/revised as necessary throughout the PPAML program's period of performance. For budgeting purposes, please use September 1, 2013, as an estimated start date for TA1, and October 1, 2013, as an estimated start date for the other Technical Areas.

The Government will specify the locations for program reviews, Principal Investigator (PI) meetings, Summer Schools (in consultation with TA1 performers), and other events. In general, for budgeting travel, assume that program reviews will be held either in Washington, D.C., or at the performer's location once a year. It is currently anticipated that the program kickoff meeting will occur in November 2013, after contract signing. It is strongly encouraged that all subcontracts are signed within one month of award of the prime contract.

PI meetings will be held approximately every 6 months, with the locations split between the east and west coasts of the United States. The goals of the PI meetings will be to: (a) review system architecture and integration progress; (b) review accomplishments of each performer; (c) demonstrate prototype and other phase accomplishments; and (d) review plans for the next period. The kick-off meeting and each subsequent PI meeting will have a registration fee that is currently estimated to be \$375 per person, in addition to travel and lodging costs.

In addition to site visits, monthly teleconference meetings will be held with each PI to enhance communications with the Government Team. Should important issues arise between program reviews, the Government Team will be available to support informal interim technical interchange meetings. It is anticipated that working groups, in addition to the PPS teams, will be formed and interact as needed.

Milestones

One month before each PI meeting, TA1 performers will evaluate the effectiveness of each team's PPS on each of the Challenge Problems defined at that point in the program. At each PI meeting, each team will demonstrate the effectiveness of their PPS on the Team Challenge Problem. At each Summer School session, the TA1 performers will evaluate the effectiveness of each team's PPS in enabling Summer School participants to build useful machine learning applications with minimal interventions from PPAML performers.

Deliverables

TA1 performers will provide Challenge Problem descriptions, metrics, data, and associated tools according to the schedule described in Figure 2. TA1 performers will provide a written report assessing the effectiveness of each PPS on each Challenge Problem at each PI meeting. TA1 performers will provide a written report within a month after the Summer School, assessing how each PPS enabled Summer School participants to effectively and independently solve their own machine learning problems.

TA2 performers will deliver a working version of their team's PPS and associated documentation to TA1 performers one month before each PI meeting. TA3 and TA4 performers will deliver appropriate code and documentation to their partnered TA2 performer at regular intervals, and on a schedule consistent with the delivery of a working PPS before each PI meeting and Summer School.

In addition, all performers will be required to provide the following deliverables:

- Technical papers covering work funded by PPAML;
- Source code, other necessary data, and accompanying documentation for all software developed under this program;
- Slide Presentations. Annotated slide presentations shall be submitted within one month after the program kickoff meeting and after each program event (program reviews, PI meetings, and technical interchange meetings);
- Quarterly Progress Reports. A quarterly progress report describing technical progress made, resources expended, major risks, planned activities, trip summaries, changes to key personnel, and any potential issues or problem areas that require the attention of the Government Team shall be provided within 10 days after the end of each quarter; and
- Final Report after each program phase. The final report shall concisely summarize the effort conducted.

Intellectual Property

As mentioned earlier, PPAML will emphasize creating and leveraging *open source* technology. Intellectual property rights asserted by proposers are strongly encouraged to be aligned with

open source regimes. Exceptions for proprietary technology will be considered only in compelling cases. See Section VI.B.2 for more details on intellectual property.

II. AWARD INFORMATION

Multiple awards are anticipated for each Technical Area except for TA1. The level of funding for individual awards made under this solicitation has not been predetermined and will depend on the quality of the proposals received and the availability of funds. Awards will be made to proposers whose proposals are determined to be the most advantageous and provide the best value to the Government, all factors considered, including the potential contributions of the proposed work, overall funding strategy, and availability of funding for the effort. See Section V.B for further information.

Proposals selected for award negotiation may result in a procurement contract, cooperative agreement, or other transaction depending upon the nature of the work proposed, the required degree of interaction between parties, and other factors. In all cases, the Government contracting officer shall have sole discretion to select award instrument type and to negotiate all instrument provisions with selectees.

As of the date of publication of this solicitation, DARPA expects that program goals for this solicitation may be met by proposers intending to perform 'fundamental research,' as defined by National Security Decision Directive 189.¹ Notwithstanding this statement of expectation, DARPA is not prohibited from considering and selecting research proposals that, while perhaps not qualifying as 'fundamental research' under the foregoing definition, still meet the solicitation criteria for submissions. If proposals are selected for award that offer other than a fundamental research solution, DARPA will either work with the proposer to modify the proposed statement of work to bring the research back into line with fundamental research or else the proposer will agree to restrictions in order to receive an award. See Section VI.B.5 for further information on fundamental, non-fundamental, and restricted research.

The Government reserves the right to:

- Select for negotiation all, some, one, or none of the proposals received in response to this solicitation.
- Make awards without discussions with proposers.
- Conduct discussions with proposers if it is later determined to be necessary.
- Segregate portions of resulting awards into pre-priced options.
- Accept proposals in their entirety or to select only portions of proposals for award.
- Fund proposals in increments with options for continued work at the end of one or more phases.
- Request additional documentation once the award instrument has been determined; such information may include but is not limited to representations and certifications.

¹ "Fundamental research means basic and applied research performed [on campus] in science and engineering, the results of which ordinarily are published and shared broadly within the scientific community, as distinguished from proprietary research and from industrial development, design, production, and product utilization, the results of which ordinarily are restricted for proprietary or national security reasons."

- Remove proposers from award consideration should the parties fail to reach agreement on award terms within a reasonable time or the proposer fails to provide requested additional information in a timely manner.

III. ELIGIBILITY

A. Applicants

All responsible sources capable of satisfying the Government's needs may submit a proposal that shall be considered by DARPA.

1. **Historically Black Colleges and Universities (HBCUs), Small Businesses, Small Disadvantaged Businesses and Minority Institutions (MIs):** HBCUs, small businesses, small disadvantaged businesses and MIs are encouraged to submit proposals and team with others to submit proposals; however, no portion of this announcement will be set aside for these organizations due to the impracticality of reserving discrete or severable areas of this research for exclusive competition among these entities.
2. **Federally Funded Research and Development Centers (FFRDCs) and Government Entities:** FFRDCs and Government entities (e.g., Government/national laboratories and military educational institutions) are subject to applicable direct competition limitations and cannot propose to this solicitation in any capacity unless the following conditions are met.
 - FFRDCs must clearly demonstrate that the proposed work is not otherwise available from the private sector and must provide a letter on official letterhead from their sponsoring organization citing the specific authority establishing eligibility to propose to Government solicitations and compete with industry, and compliance with the associated FFRDC sponsor agreement and terms and conditions. This information is required for FFRDCs proposing as either prime contractors or subcontractors.
 - Government entities must clearly demonstrate that the proposed work is not otherwise available from the private sector and provide documentation citing the specific statutory authority (and contractual authority, if relevant) establishing their eligibility to propose to Government solicitations.

At the present time, DARPA does not consider 15 U.S.C. § 3710a to be sufficient legal authority to show eligibility. While 10 U.S.C. § 2539b may be the appropriate statutory starting point for some entities, specific supporting regulatory guidance, together with evidence of agency approval, will still be required to fully establish eligibility.

DARPA will consider eligibility submissions on a case-by-case basis; however, the burden to prove eligibility for all team members rests solely with the proposer.

3. **Foreign Participation:** Non-U.S. organizations and/or individuals may participate to the extent that such participants comply with any necessary nondisclosure agreements, security regulations, export control laws, and other governing statutes applicable under the circumstances.

B. Procurement Integrity, Standards of Conduct, Ethical Considerations and Organizational Conflicts of Interest

Current Federal employees are prohibited from participating in particular matters involving conflicting financial, employment, and representational interests (18 U.S.C. §§ 203, 205, and 208). Prior to the start of proposal evaluation, the Government will assess potential conflicts of interest and will promptly notify the proposer if any appear to exist. The Government assessment does not affect, offset, or mitigate the proposer's responsibility to give full notice and planned mitigation for all potential organizational conflicts, as discussed below.

In accordance with FAR² 9.503 and without prior approval or a waiver from the DARPA Director, a contractor cannot simultaneously be a scientific, engineering, and technical assistance (SETA) contractor and a performer. As part of the proposal submission, all members of a proposed team (prime proposers, proposed subcontractors and consultants must affirm whether they (individuals and organizations) are providing SETA or similar support to any DARPA technical office(s) through an active contract or subcontract. Affirmations must state which office(s) the proposer and/or proposed subcontractor/consultant supports and must provide prime contract numbers. All facts relevant to the existence or potential existence of organizational conflicts of interest (FAR 9.5) must be disclosed. The disclosure shall include a description of the action the proposer has taken or proposes to take to avoid, neutralize, or mitigate such conflict. If, in the sole opinion of the Government after full consideration of the circumstances, a proposal fails to fully disclose potential conflicts of interest and/or any identified conflict situation cannot be effectively mitigated, the proposal will be rejected without technical evaluation and withdrawn from further consideration for award.

If a prospective proposer believes a conflict of interest (COI) exists or may exist (whether organizational or otherwise) or has a question as to what constitutes a conflict, a summary of the potential conflict should be sent to PPAML@darpa.mil before preparing a proposal and mitigation plan.

C. Cost Sharing/Matching

Cost sharing is not required; however, it will be carefully considered where there is an applicable statutory condition relating to the selected funding instrument (e.g., other transactions under the authority of 10 U.S.C. § 2371). See Section IV.B.2.e for further information on cost sharing requirements for other transactions.

D. Other Eligibility Requirements

- 1. Submission of Proposals to Multiple Technical Areas:** Each submitted proposal should cover only one Technical Area with the exception of TAs 2 and 4, which can be submitted together. For clarification purposes, there are five permitted proposal options: (a) TA1, (b) TA2, (c) TA3, (d) TA4, or (e) TAs 2 and 4. Proposers should submit no more than one proposal as a prime contractor for each TA. Proposers selected for

² <http://www.acquisition.gov/FAR/>.

TA1 (Domain Experts) cannot be selected for any portion of the other three Technical Areas, whether as a prime, subcontractor, or in any other capacity. This restriction avoids organizational conflicts of interest between the TAs and seeks to ensure objective test and evaluation results. Separate research groups inside a large business represent separate entities and, thus, each such research group is allowed to submit a proposal as a prime towards Technical Areas 1-4. Even in this situation, a large business as a whole cannot have entities selected for TA1 and Technical Areas 2-4. If a proposal is submitted for more than one Technical Area (i.e., option e), the decision as to which Technical Area(s), if any, to consider for award is at the discretion of the Government.

IV. APPLICATION

A. Announcement

This announcement contains all information required to respond to this solicitation and constitutes the total solicitation. No additional forms, kits, or other materials are needed. No request for proposal (RFP) or additional solicitation regarding this opportunity will be issued, nor is additional information available except as provided at the Federal Business Opportunities website (<http://www.fbo.gov>) and Grants.gov website (<http://www.grants.gov/>) or referenced herein.

B. Proposals

Proposals consist of Volume 1: Technical and Management Proposal (including mandatory Appendix A and optional Appendix B) and Volume 2: Cost Proposal.

All pages shall be formatted for printing on 8-1/2 by 11-inch paper with a font size not smaller than 12 point. Font sizes of 8 or 10 point may be used for figures, tables, and charts.

Document files must be in .pdf, .odx, .doc, .docx, .xls, or .xlsx formats.

Submissions must be written in English.

Proposals not meeting the format prescribed herein may not be reviewed.

- 1. Volume 1 - Technical and Management Proposal:** If a proposer submits a proposal for one Technical Area, the maximum count for the technical portion (Executive Summary, Goals and Impact, and Technical Plan sections) of Volume 1 is 16 pages, including all figures, tables and charts, but not including the cover sheet, table of contents or appendices. The management portion (the remaining sections) of the proposal may take up to 10 additional pages. If a proposer submits a proposal for two TAs, the maximum count for the technical portion of Volume 1 is increased to 23 total pages, including all figures, tables and charts, but not including the cover sheet, table of contents or appendices. A submission letter is optional and is not included in the page count. Appendix A does not count against the page limit and is mandatory. Appendix B does not count against the page limit and is optional. Additional information not explicitly called for here must not be submitted with the proposal, but may be included as links in the bibliography in Appendix B. Such materials will be considered for the reviewers' convenience only and not evaluated as part of the proposal.

Volume 1 must include the following components:

- a. Cover Sheet:** Include the following information.

- Label: "Proposal: Volume 1"
- BAA number (DARPA-BAA-13-31)

- Technical area proposed
- Proposal title
- Lead organization (prime contractor) name
- Type of business, selected from the following categories: Large Business, Small Disadvantaged Business, Other Small Business, HBCU, MI, Other Educational, or Other Nonprofit
- Technical point of contact (POC) including name, mailing address, telephone number, and email address
- Administrative POC including name, mailing address, telephone number, and email address
- Award instrument requested: procurement contract (specify type), cooperative agreement or other transaction agreement.³
- Place(s) and period(s) of performance
- Other team member (subcontractors and consultants) information (for each, include Technical POC name, organization, type of business, mailing address, telephone number, and email address)
- Proposal validity period (minimum 120 days)
- Data Universal Numbering System (DUNS) number
(<http://fedgov.dnb.com/webform/index.jsp>)
- Taxpayer identification number
(<http://www.irs.gov/businesses/small/international/article/0,,id=96696,00.html>)
- Commercial and Government Entity (CAGE) code
(http://www.dlis.dla.mil/CAGESearch/cage_faq.asp)
- Proposer's reference number (if any)

b. Table of Contents

c. Executive Summary: Provide a synopsis of the proposed project, including answers to the following questions.

- What is the proposed work attempting to accomplish or do?
- How is it done today, and what are the limitations?
- Who or what will be affected and what will the impact be if the proposed work is successful?
- How much will it cost, and how long will it take?

The executive summary should include a description of the key technical challenges, a concise review of the technologies proposed to overcome these challenges and achieve the project's goal, and a clear statement of the novelty and uniqueness of the proposed work.

³ Information on award instruments can be found at
http://www.darpa.mil/Opportunities/Contract_Management/Contract_Management.aspx.

- d. Goals and Impact:** Describe clearly what the proposed team is trying to achieve and the difference it will make (qualitatively and quantitatively) if successful. Describe the innovative aspects of the project in the context of existing capabilities and approaches, clearly delineating the uniqueness and benefits of this project in the context of the state of the art, alternative approaches, and other projects from the past and present. Describe how the proposed project is revolutionary and how it significantly rises above the current state of the art.

Describe the deliverables associated with the proposed project and any plans to commercialize the technology, transition it to a customer, or further the work. Discuss the mitigation of any issues related to sustainment of the technology over its entire lifecycle, assuming the technology transition plan is successful.

- e. Technical Plan:** Outline and address technical challenges inherent in the approach and possible solutions for overcoming potential problems. Demonstrate a deep understanding of the technical challenges and present a credible (even if risky) plan to achieve the project's goal. Discuss mitigation of technical risk. Provide appropriate measurable milestones (quantitative if possible) at intermediate stages of the project to demonstrate progress, and a plan for achieving the milestones.
- f. Management Plan:** Provide a summary of expertise of the proposed team, including any subcontractors/consultants and key personnel who will be executing the work. Resumes count against the proposal page count so proposers may wish to include them as links in Appendix B below. Identify a principal investigator (PI) for the project. Provide a clear description of the team's organization including an organization chart that includes, as applicable, the relationship of team members; unique capabilities of team members; task responsibilities of team members; teaming strategy among the team members; and key personnel with the amount of effort to be expended by each person during the project. Provide a detailed plan for coordination including explicit guidelines for interaction among collaborators/subcontractors of the proposed project. Include risk management approaches. Describe any formal teaming agreements that are required to execute this project.
- g. Capabilities:** Describe organizational experience in relevant subject area(s), existing intellectual property (IP), specialized facilities, and any Government-furnished materials or information. Discuss any work in closely related research areas and previous accomplishments.
- h. Statement of Work (SOW):** The SOW must provide a detailed task breakdown, citing specific tasks and their connection to the interim milestones and metrics, as applicable. Each year of the project should be separately defined. To the extent practical, the SOW should be organized by the work required to achieve a particular technical goal rather than by the work performed by a particular functional team (e.g., development, testing, etc.). The SOW must not include proprietary information.

For each defined task/subtask, provide:

- A general description of the objective.
- A detailed description of the approach to be taken to accomplish each defined task/subtask.
- Identification of the primary organization responsible for task execution (prime contractor, subcontractor(s), consultant(s), by name).
- A measurable milestone, i.e., a deliverable, demonstration, or other event/activity that marks task completion.
- A definition of all deliverables (e.g., data, reports, software) to be provided to the Government in support of the proposed tasks/subtasks.
- A clear identification of any tasks/subtasks [by the prime, subcontractor(s), or consultant(s)] that will be accomplished on campus at a university.

i. **Schedule and Milestones:** Provide a detailed schedule showing tasks (task name, duration, work breakdown structure element as applicable, performing organization), milestones, and the interrelationships among tasks. The task structure must be consistent with that in the SOW. Measurable milestones should be clearly articulated and defined in time relative to the start of project.

j. **Cost Summary:** Provide the cost summary as described in Section IV.B.2.b.

k. **Appendix A:** This section is mandatory and must include all of the following components. If a particular subsection is not applicable, state “NONE.”

(i) **Team Member Identification:** Provide a list of all team members [prime, subcontractor(s), and consultant(s)]. Identify specifically whether any are a non-US organization or individual, FFRDC and/or Government entity. The following format should be used for this list:

Individual Name	Role (Prime, Subcontractor or Consultant)	Organization	Non-US?		FFRDC or Govt?
			Org.	Ind.	

(ii) **Government or FFRDC Team Member Authority to Propose to this BAA:** If none of the team member organizations (prime or subcontractor) are a Government entity or FFRDC, state “NONE.”

If any of the team member organizations are a Government entity or FFRDC, provide documentation (per Section III.A.2) citing the specific authority that establishes the applicable team member as eligible to propose to Government

solicitations to include: (1) statutory authority; (2) contractual authority; (3) supporting regulatory guidance; and (4) evidence of agency approval for applicable team member participation.

- (iii) Government or FFRDC Team Member Statement of Unique Capability:** If none of the team member organizations (prime or subcontractor) are a Government entity or FFRDC, state “NONE.”

If any of the team member organizations are a Government entity or FFRDC, provide a statement that demonstrates the work being provided by the Government entity or FFRDC team member is not otherwise available from the private sector.

- (iv) Organizational Conflict of Interest Affirmations and Disclosure:** If none of the proposed team members is currently providing SETA support as described in Section III.B, state “NONE.”

If any of the proposed team members (individual or organization) is currently providing SETA support, provide the following information:

Prime Contract Number	DARPA Technical Office supported	A description of the action the proposer has taken or proposes to take to avoid, neutralize, or mitigate the conflict

- (v) Intellectual Property:** If no IP restrictions are intended, state “NONE.” The Government will assume unlimited rights to all IP not explicitly identified as restricted in the proposal.

For all technical data or computer software that will be furnished to the Government with other than unlimited rights, provide (per Section VI.B.2) a list describing all proprietary claims to results, prototypes, deliverables or systems supporting and/or necessary for the use of the research, results, prototypes and/or deliverables. Provide documentation proving ownership or possession of appropriate licensing rights to all patented inventions (or inventions for which a patent application has been filed) to be used for the proposed project. The following format should be used for this list:

NONCOMMERCIAL				
Technical Data and/or Computer Software To be Furnished With Restrictions	Summary of Intended Use in the Conduct of the Research	Basis for Assertion	Asserted Rights Category	Name of Person Asserting Restrictions
(List)	(Narrative)	(List)	(List)	(List)

COMMERCIAL				
Technical Data and/or Computer Software To be Furnished With Restrictions	Summary of Intended Use in the Conduct of the Research	Basis for Assertion	Asserted Rights Category	Name of Person Asserting Restrictions
(List)	(Narrative)	(List)	(List)	(List)

(vi) Human Use: If human use is not a factor in the proposal, state “NONE.”

If the proposed work will involve human subjects, provide evidence of or a plan for review by an institutional review board (IRB). For further information on this subject, see Section VI.B.3.

(vii) Animal Use: If animal use is not a factor in the proposal, state “NONE.”

If the proposed research will involve animal use, provide a brief description of the plan for Institutional Animal Care and Use Committee (IACUC) review and approval. For further information on this subject, see Section VI.B.4.

(viii) Representations Regarding Unpaid Delinquent Tax Liability or a Felony Conviction under Any Federal Law: Per Section VI.B.11, complete the following statements.

(1) The proposer represents that it is ☐ is not ☐ a corporation that has any unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted or have lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability.

(2) The proposer represents that it is ☐ is not ☐ a corporation that was convicted of a felony criminal violated under Federal law within the preceding 24 months.

(ix) Cost Accounting Standards (CAS) Notices and Certification: Per Section VI.B.12, any proposer who submits a proposal which, if accepted, will result in a CAS compliant contract, must include a Disclosure Statement as required by 48 CFR 9903.202. The disclosure forms may be found at http://www.whitehouse.gov/omb/procurement_casb.

If this section is not applicable, state “NONE.”

(x) Subcontractor Plan: Pursuant to Section 8(d) of the Small Business Act (15 U.S.C. § 637(d)), it is Government policy to enable small business and small disadvantaged business concerns to be considered fairly as subcontractors to organizations

performing work as prime contractors or subcontractors under Government contracts, and to ensure that prime contractors and subcontractors carry out this policy. If applicable, prepare a subcontractor plan in accordance with FAR 19.702(a) (1) and (2). The plan format is outlined in FAR 19.704.

If this section is not applicable, state “NONE.”

- I. **Appendix B:** If desired, include a brief bibliography with links to relevant papers, reports, or resumes. Do not include technical papers. This section is optional, and the linked materials will not be evaluated as part of the proposal review.
2. **Volume 2 - Cost Proposal:** This volume is mandatory and must include all the listed components. No page limit is specified for this volume.
 - a. **Cover Sheet:** Include the same information as the cover sheet for Volume 1, but with the label “Proposal: Volume 2.”
 - b. **Cost Summary:** Provide a single-page summary with cost totals for labor, materials, other direct charges (ODCs), indirect costs (overhead, fringe, general and administrative (G&A)), and the proposed fee (if any) for the project by fiscal year. Include costs for each task in each year of the project by prime and major subcontractors, total cost and proposed cost share, if applicable. Project tasks in the cost summary should be aligned with the project tasks in the SOW; both should use the same naming/numbering conventions for tasks. Include any requests for Government-furnished equipment or information with cost estimates (if applicable) and delivery dates.
 - c. **Detailed Cost Information:** Provide detailed cost information for direct labor (including labor categories), materials, ODCs and indirect costs by month for each task of the project. Information provided for subcontractors/consultants must be at the same level of detail as that provided for prime contractors. Both labor rates and hours should be detailed. A separate breakdown should be done for any proposed option(s).

Summarize task-level cost information to give total expenditures on labor, materials, indirect costs and ODCs by month for the prime and subcontractors/consultants. Identify cost sharing (if any). Itemize purchases of information technology (as defined in FAR 2.101). Provide totals for all cost categories.

The cost proposal should include a spreadsheet file (.xls or equivalent format) that provides formula traceability among all components of the cost proposal. Costs must be traceable between the prime, subcontractors/consultants, as well as between the cost proposal and the SOW. The spreadsheet file must be included as a separate component of the full proposal package.

For proposed information technology and equipment purchases that are equal to or

greater than \$50,000 for a single item, a letter must be included justifying the purchase.

Proposers without a Defense Contract Audit Agency-approved cost accounting system who are requesting a cost-type contract must include a completed form SF 1408 in the proposal in order for the submission to be deemed conforming to this solicitation. The SF 1408 form can be found at <http://www.acquisition.gov/far/html/FormsStandard41.html>.

Supporting cost and pricing information must include a description of the method used to estimate costs and supporting documentation. “Certified cost or pricing data” (as defined in FAR 15.4) shall be required if the proposer is seeking a procurement contract award of \$700,000 or greater unless the proposer requests an exception from the requirement to submit this information. Certified cost or pricing data is not required if the proposer proposes an award instrument other than a procurement contract (e.g., a grant, cooperative agreement, or other transaction).

Pre-award costs are not reimbursable for awards made under this solicitation.

See Section III.C for information on cost sharing/matching.

A cost proposal checklist is provided in Section VIII.C. Nonconforming proposals may be rejected without review.

- d. Subcontractor/Consultant Cost Proposals:** The proposer is responsible for the compilation and submission of all subcontractor/consultant cost proposals. Proposal submissions will not be considered complete until the Government has received all subcontractor/consultant cost proposals.

Proprietary subcontractor/consultant cost proposals may be included as part of Volume 2 or emailed separately to PPAML@darpa.mil (not uploaded to the submission site). Email messages must include “Subcontractor Cost Proposal” in the subject line and identify by name the principal investigator and prime proposer organization in the body of the message.

Subcontractor cost proposals must include interdivisional work transfer agreements or similar arrangements.

- e. Other Transactions:** If the proposer requests award of an 845 Other Transaction Authority for Prototypes Agreement (845 OTA) as a nontraditional defense contractor, as defined in the Office of the Secretary of Defense (OSD) “Other Transactions (OT) Guide For Prototype Projects,” dated January 2001 (as amended),⁴ information must be included in the cost proposal to support the claim. If the proposer requests award

⁴ <http://www.acq.osd.mil/dpap/Docs/otguide.doc>

of an 845 OTA agreement without the required one-third cost share, information must be included in the cost proposal supporting the claim that there is at least one nontraditional defense contractor participating to a significant extent in the proposed prototype project.

Proposers requesting an 845 OTA agreement must include a detailed list of milestones including: description, completion criteria, due date, and payment/funding schedule (to include, if cost share is proposed, contractor and Government share amounts). Milestones must relate directly to accomplishment of technical metrics as defined in the solicitation and/or the proposal. While agreement type (fixed price or expenditure based) will be subject to negotiation, the use of fixed price milestones with a payment/funding schedule is preferred. Proprietary information must not be included as part of the milestones.

For further information on 845 OTA agreements, refer to http://www.darpa.mil/Opportunities/Contract_Management/Other_Transactions_and_Technology_Investment_Agreements.aspx.

C. Proprietary and Classified Information

DARPA policy is to treat all submissions as source selection information (see FAR 2.101 and 3.104) and to disclose the contents only for the purpose of evaluation. Restrictive notices notwithstanding, during the evaluation process, submissions may be handled by support contractors for administrative purposes and/or to assist with technical evaluation. All DARPA support contractors performing this role are expressly prohibited from performing DARPA-sponsored technical research and are bound by appropriate nondisclosure agreements.

1. **Proprietary Information:** Proposers are responsible for clearly identifying proprietary information. Submissions containing proprietary information must have the cover page and each page containing such information clearly marked. Proprietary information must not be included in the proposed schedule, milestones, or SOW.
2. **Classified Information:** Because PPAML emphasizes the idea of creating and leveraging open source technology, classified submissions (classified technical proposal or classified appendices to unclassified proposals) WILL NOT be accepted under this solicitation.

D. Submission Instructions

1. **Closing Date:** The proposal package--full proposal (Volume 1 and 2) and, as applicable, encryption password, proprietary subcontractor cost proposals--must be submitted per the instructions outlined herein and received by DARPA no later than May 16, 2013 at 1200 noon (ET). Submissions received after this time will not be reviewed.

Proposers are warned that submission deadlines as outlined herein are **strictly enforced**.

DARPA will acknowledge receipt of complete submissions via email and assign control numbers that should be used in all further correspondence regarding proposals. Note: these acknowledgements will not be sent until after the proposal due date.

Failure to comply with the submission procedures outlined herein may result in the submission not being evaluated.

- 2. Unclassified Submission:** Proposers must submit all parts of their proposal package using the same method; submissions cannot be sent in part by one method and in part by another method, nor should duplicate submissions be sent by multiple methods.
Email submissions will not be accepted.

a. Proposals Requesting a Procurement Contract or Other Transaction Agreement:

DARPA/I2O will employ an electronic web-based upload submission system for UNCLASSIFIED proposals seeking a procurement contract or other transaction under this solicitation. For each proposal submission, proposers must complete an online cover sheet in the [DARPA/I2O Solicitation Submission System](#). Upon completion of the online cover sheet, a confirmation screen will appear along with instructions on uploading the proposal.

If a proposer intends to submit more than one proposal, a unique user ID and password MUST be used in creating each cover sheet or subsequent uploads will overwrite previous ones. Once each upload is complete, a confirmation will appear and should be printed for the proposer's records.

All uploaded proposals must be zipped and encrypted using WinZip or PKZip with 256-bit AES encryption. Only one zipped/encrypted file will be accepted per submission. Submissions which are not zipped/encrypted will be rejected by DARPA. At the time of submission, an [encryption password form](#) must be completed and emailed to PPAML@darpa.mil with the word "PASSWORD" in the subject line of the email. Failure to provide the encryption password will result in the submission not being evaluated.

Since proposers may encounter heavy traffic on the web server, they should not wait until the day proposals are due to fill out a cover sheet and upload the submission. Technical support for web server/submission issues may be directed to BAATechHelp@darpa.mil. Technical support is typically available during regular business hours (9:00 AM – 5:00 PM ET, Monday – Friday).

- b. Proposals Requesting a Cooperative Agreement:** Proposers requesting cooperative agreements may submit proposals through one of the following methods: (1) mailed directly to DARPA; or (2) electronic upload per the instructions at http://www.grants.gov/applicants/apply_for_grants.jsp.

Grants.gov requires proposers to complete a one-time registration process before a proposal can be electronically submitted. If proposers have not previously registered, this process can take between three business days and four weeks if all steps are not completed in a timely manner. See the Grants.gov registration checklist⁵ for specific information.

Once Grants.gov has received an uploaded proposal submission, Grants.gov will send two email messages to notify proposers that: (1) their submission has been received by Grants.gov; and (2) the submission has been either validated or rejected by the system. It may take up to two business days to receive these emails. If the proposal is rejected, it must be corrected and re-submitted prior to the solicitation's closing time and date. If the proposal is validated, then the proposer has successfully submitted their proposal and Grants.gov will notify DARPA. Once the proposal is retrieved by DARPA, Grants.gov will send a third email to notify the proposer. The proposer will then receive an email from DARPA acknowledging receipt and providing a control number.

To avoid missing deadlines, proposers should submit their proposals to Grants.gov in advance of the solicitation closing date, with sufficient time to complete the registration and submission processes, receive email notifications and correct errors, as applicable.

Technical support for Grants.gov submissions may be reached at 1-800-518-4726 and support@grants.gov.

- 3. Classified Submission:** As mentioned previously, because PPAML emphasizes the idea of creating and leveraging open source technology, classified submissions (classified technical proposal or classified appendices to unclassified proposals) WILL NOT be accepted under this solicitation.

E. Funding Restrictions

Not applicable.

⁵ http://www.grants.gov/assets/Organization_Steps_Complete_Registration.pdf

V. EVALUATION

A. Evaluation Criteria

Evaluation of proposals will be accomplished through a scientific/technical review process using the following criteria listed in descending order of importance: (a) Overall Scientific and Technical Merit; (b) Potential Contribution and Relevance to the DARPA Mission; and (c) Cost Realism.

- **Overall Scientific and Technical Merit:** The proposed technical approach is feasible, achievable, complete and supported by a proposed technical team that has the expertise and experience to accomplish the proposed tasks. The task descriptions and associated technical elements are complete and in a logical sequence, with all proposed deliverables clearly defined such that a viable attempt to achieve project goals is likely as a result of award. The proposal identifies major technical risks and clearly defines feasible mitigation efforts.
- **Potential Contribution and Relevance to the DARPA Mission:** The potential contributions of the proposed project are relevant to the national technology base. Specifically, DARPA's mission is to maintain the technological superiority of the U.S. military and prevent technological surprise from harming national security by sponsoring revolutionary, high-payoff research that bridges the gap between fundamental discoveries and their application.
- **Cost Realism:** The proposed costs are based on realistic assumptions, reflect a sufficient understanding of the technical goals and objectives of the solicitation, and are consistent with the proposer's technical/management approach (to include the proposed SOW). The costs for the prime and subcontractors/consultants are substantiated by the details provided in the proposal (e.g., the type and number of labor hours proposed per task, the types and quantities of materials, equipment and fabrication costs, travel and any other applicable costs).

B. Review and Selection Process

DARPA policy is to ensure impartial, equitable, and comprehensive proposal evaluations and to select proposals that meet DARPA technical, policy, and programmatic goals.

Qualified Government personnel will conduct reviews and (if necessary) convene panels of experts in the appropriate areas. Subject to the restrictions set forth in FAR 37.203(d), input on technical aspects of the proposals may be solicited by DARPA from non-Government consultants/experts who are strictly bound by appropriate nondisclosure agreements/requirements.

The review process identifies proposals that meet the established criteria and are, therefore, selectable for funding awards by the Government. Selections under this solicitation will be

made to proposers on the basis of the evaluation criteria listed in Section V.A. Proposals that are determined to be selectable will not necessarily receive awards. Selections may be made at any time during the period of solicitation.

Proposals are evaluated individually, not rated competitively against other proposals because they are not submitted in accordance with a common work statement. For purposes of evaluation, a proposal is defined to be the document and supporting materials (except Appendix B) as described in Section IV.

Failure to comply with the submission procedures may result in the submission not being evaluated. No proposals will be returned. After proposals have been evaluated and selections made, the original of each proposal will be retained at DARPA. All other copies will be destroyed.

VI. AWARD ADMINISTRATION

A. Selection Notices

After proposal evaluations are complete, proposers will be notified as to whether their proposal was selectable as determined by the review process. Notification will be sent by email to the technical and administrative POCs identified on the proposal cover sheet. If a proposal has been selected for award negotiation, the Government will initiate those negotiations following the notification.

B. Administrative and National Policy Requirements

1. **Meeting and Travel Requirements:** Performers should anticipate periodic site visits at the program manager's discretion.
2. **Intellectual Property:** It is desired that all noncommercial software (including source code), software documentation, hardware designs and documentation, and technical data generated under the program be provided as a deliverable to the Government, with a minimum of Government Purpose Rights. Therefore, to the greatest extent feasible, proposers should not include background proprietary software and technical data as the basis of their proposed approach. If proposers desire to use proprietary software or technical data or both as the basis of their proposed approach, in whole or in part, they should: (1) clearly identify such software/data and its proposed particular use(s); (2) explain how the Government will be able to reach its program goals (including transition) within the proprietary model offered; and (3) provide possible nonproprietary alternatives in any area that might present transition difficulties or increased risk or cost to the Government under the proposed proprietary solution.

Proposers expecting to use, but not to deliver, commercial open source tools or other materials in implementing their approach may be required to indemnify the Government against legal liability arising from such use.

All references to "Unlimited Rights" or "Government Purpose Rights" are intended to refer to the definitions of those terms as set forth in the Defense Federal Acquisition Regulation Supplement (DFARS) Part 227.

- a. **Intellectual Property Representations:** All proposers must provide a good faith representation of either ownership or possession of appropriate licensing rights to all other intellectual property to be used for the proposed project. Proposers must provide a short summary for each item asserted with less than unlimited rights that describes the nature of the restriction and the intended use of the intellectual property in the conduct of the proposed research.
- b. **Patents:** All proposers must include documentation proving ownership or possession of appropriate licensing rights to all patented inventions to be used for the proposed

project. If a patent application has been filed for an invention, but it includes proprietary information and is not publicly available, a proposer must provide documentation that includes: the patent number, inventor name(s), assignee names (if any), filing date, filing date of any related provisional application, and summary of the patent title, with either: (1) a representation of invention ownership, or (2) proof of possession of appropriate licensing rights in the invention (i.e., an agreement from the owner of the patent granting license to the proposer).

c. Proposers Requesting Procurement Contracts

- **Noncommercial Items (Technical Data and Computer Software):** Proposers requesting a procurement contract must list all noncommercial technical data and computer software that it plans to generate, develop, and/or deliver, in which the Government will acquire less than unlimited rights and to assert specific restrictions on those deliverables. In the event a proposer does not submit the list, the Government will assume that it has unlimited rights to all noncommercial technical data and computer software generated, developed, and/or delivered, unless it is substantiated that development of the noncommercial technical data and computer software occurred with mixed funding. If mixed funding is anticipated in the development of noncommercial technical data and computer software generated, developed, and/or delivered, proposers should identify the data and software in question as subject to GPR. In accordance with DFARS 252.227-7013, “Rights in Technical Data - Noncommercial Items,” and DFARS 252.227-7014, “Rights in Noncommercial Computer Software and Noncommercial Computer Software Documentation,” the Government will automatically assume that any such GPR restriction is limited to a period of 5 years, at which time the Government will acquire unlimited rights unless the parties agree otherwise. The Government may use the list during the evaluation process to evaluate the impact of any identified restrictions and may request additional information from the proposer, as may be necessary, to evaluate the proposer’s assertions. Failure to provide full information may result in a determination that the proposal is not compliant with the solicitation.

A template for complying with this request is provided in Section IV.B.1.k(v). If no restrictions are intended, the proposer should state “NONE.”

- **Commercial Items (Technical Data and Computer Software):** Proposers responding to this solicitation requesting a procurement contract must list all commercial technical data and commercial computer software that may be included in any noncommercial deliverables contemplated under the research project, and assert any applicable restrictions on the Government’s use of such commercial technical data and/or computer software. In the event a proposer does not submit the list, the Government will assume there are no restrictions on the Government’s use of such commercial items. The Government may use

the list during the evaluation process to evaluate the impact of any identified restrictions and may request additional information from the proposer to evaluate the proposer's assertions. Failure to provide full information may result in a determination that the proposal is not compliant with the solicitation.

A template for complying with this request is provided in Section IV.B.1.k(v). If no restrictions are intended, the proposer should state "NONE."

- d. Proposers Requesting Other Types of Awards:** Proposers responding to this solicitation requesting a cooperative agreement, technology investment agreement, or OTA shall follow the applicable rules and regulations governing these various award instruments, but in all cases should appropriately identify any potential restrictions on the Government's use of any intellectual property contemplated under those award instruments in question. This includes both noncommercial items and commercial items. Proposers may use a format similar to the template provided in Section IV.B.1.k(v). The Government may use the list as part of the evaluation process to assess the impact of any identified restrictions, and may request additional information from the proposer, to evaluate the proposer's assertions. Failure to provide full information may result in a determination that the proposal is not compliant with the solicitation. If no restrictions are intended, the proposer should state "NONE."

- 3. Human Use:** All research involving human subjects, to include the use of human biological specimens and human data, selected for funding must comply with Federal regulations for human subject protection. Further, research involving human subjects that is conducted or supported by the DoD must comply with 32 CFR 219, "Protection of Human Subjects"⁶ and DoD Directive 3216.02, "Protection of Human Subjects and Adherence to Ethical Standards in DoD-Supported Research."⁷

Institutions awarded funding for research involving human subjects must provide documentation of a current Assurance of Compliance with Federal regulations for human subject protection, for example a Department of Health and Human Services, Office of Human Research Protection Federal Wide Assurance.⁸ All institutions engaged in human subject research, to include subcontractors, must have a valid assurance. In addition, personnel involved in human subject research must document the completion of appropriate training for the protection of human subjects.

For all research that will involve human subjects in the first year or phase of the project, the institution must submit evidence of a plan for review by an institutional review board (IRB) as part of the proposal. The IRB conducting the review must be the IRB identified on the institution's Assurance of Compliance. The protocol, separate from the

⁶ http://www.ecfr.gov/cgi-bin/text-idx?c=ecfr&tpl=/ecfrbrowse/Title32/32cfr219_main_02.tpl

⁷ <http://www.dtic.mil/whs/directives/corres/pdf/321602p.pdf>

⁸ <http://www.hhs.gov/ohrp>

proposal, must include a detailed description of the research plan, study population, risks and benefits of study participation, recruitment and consent process, data collection, and data analysis. The designated IRB should be consulted for guidance on writing the protocol. The informed consent document must comply with 32 CFR 219.116. A valid Assurance of Compliance and evidence of appropriate training by all investigators should accompany the protocol for review by the IRB.

In addition to a local IRB approval, a headquarters-level human subjects regulatory review and approval is required for all research conducted or supported by the DoD. The Army, Navy, or Air Force office responsible for managing the award can provide guidance and information about their component's headquarters-level review process. Confirmation of a current Assurance of Compliance and appropriate human subjects protection training is required before headquarters-level approval can be issued.

The time required to complete the IRB review/approval process will vary depending on the complexity of the research and/or the level of risk to study participants; ample time should be allotted to complete the approval process. The IRB approval process can last between 1 to 3 months, followed by a DoD review that could last 3 to 6 months. No DoD/DARPA funding may be used toward human subject research until all approvals are granted.

- 4. Animal Use:** Award recipients performing research, experimentation, or testing involving the use of animals shall comply with the rules on animal acquisition, transport, care, handling, and use as outlined in:
- 9 CFR Parts 1-4, Department of Agriculture regulation that implements the Animal Welfare Act of 1966, as amended (7 U.S.C. §§ 2131-2159);
 - National Institutes of Health Publication No. 86-23, "Guide for the Care and Use of Laboratory Animals"; and
 - DoD Directive 3216.01, "Use of Animals in DoD Programs."

For projects anticipating animal use, proposals should briefly describe plans for Institutional Animal Care and Use Committee (IACUC) review and approval. Animal studies in the program will be expected to comply with the "Public Health Service Policy on Humane Care and Use of Laboratory Animals."⁹

All award recipients must receive approval by a DoD-certified veterinarian, in addition to IACUC approval. No animal studies may be conducted using DoD/DARPA funding until the U.S. Army Medical Research and Materiel Command Animal Care and Use Review Office (ACURO) or other appropriate DoD veterinary office(s) grant approval. As a part of this secondary review process, the recipient will be required to complete and submit an ACURO Animal Use Appendix.¹⁰

⁹ <http://grants.nih.gov/grants/olaw/olaw.htm>

¹⁰ https://mrhc.amedd.army.mil/index.cfm?pageid=Research_Protections.acuroAnimalAppendix

- 5. Publication Approval and Fundamental Research:** It is DoD policy that the publication of products of fundamental research will remain unrestricted to the maximum extent possible. Per DoD Directive 5230.27, contracted fundamental research “includes [research performed under] grants and contracts that are (a) funded by budget category 6.1 (Basic Research), whether performed by universities or industry, or (b) funded by budget category 6.2 (Applied Research) and performed on campus at a university. The research shall not be considered fundamental in those rare and exceptional circumstances where the applied research effort presents a high likelihood of disclosing performance characteristics of military systems or manufacturing technologies that are unique and critical to defense, and where agreement on restrictions have been recorded in the contract or grant.” Such research is referred to by DARPA as “restricted research.”

Pursuant to DoD policy, research performed under DoD awards that is either: (a) funded by budget category 6.2 (Applied Research) and not performed on campus at a university; or (b) funded by budget category 6.3 (Advanced Research) does not meet the definition of fundamental research. Such research is referred to by DARPA as “non-fundamental research.”

For certain projects, even if the effort being performed by the prime contractor is restricted research, a subcontractor may be performing contracted fundamental research. In these cases, it is the prime contractor’s responsibility to explain in the proposal why the subcontractor’s effort is contracted fundamental research.

It is anticipated that awards for fundamental research may be made as a result of this solicitation. DARPA does not anticipate applying publication restrictions of any kind.

Proposers are advised that, if cooperative agreements are proposed as the award instrument, DARPA may elect to award other award instruments due to the need to apply publication or other restrictions. DARPA will make this election if it determines that research resulting from the proposed project will present a high likelihood of disclosing performance characteristics of military systems or manufacturing technologies that are unique and critical to defense. Such a determination will result in the project being considered restricted research and any resultant award will include a requirement for DARPA permission before publishing any information or results on the project.

The following statements or similar provisions will be incorporated into any resultant procurement contract or other transaction for restricted or non-fundamental research:

There shall be no dissemination or publication, except within and between the contractor and any subcontractors, of information developed under this contract or contained in the reports to be furnished pursuant to this contract without prior written approval of the DARPA Public Release Center (PRC). All technical reports will be given proper review by appropriate authority to determine which

distribution statement is to be applied prior to the initial distribution of these reports by the contractor. With regard to subcontractor proposals for contracted fundamental research, papers resulting from unclassified contracted fundamental research are exempt from prepublication controls and this review requirement, pursuant to DoD Instruction 5230.27 'Presentation of DoD-Related Scientific and Technical Papers at Meetings.'

When submitting material for written approval for open publication, the contractor/awardee must submit a request for public release to the DARPA PRC and include the following information: 1) Document Information: title, author, short plain-language description of technology discussed in the material (approximately 30 words), number of pages (or minutes of video/audio) and document type (e.g., briefing, report, abstract, article, or paper); 2) Event Information: type (e.g., conference, principal investigator meeting, article or paper), date, and desired date for DARPA's approval; 3) DARPA Sponsor: DARPA program manager, DARPA office, and contract number; and 4) Contractor/Awardee's information: POC name, email address and telephone number. Four weeks should be allowed for processing; due dates under four weeks will require justification. Unusual electronic file formats may require additional processing time. Requests can be sent either by email to prc@darpa.mil or direct mail to 675 North Randolph Street, Arlington VA 22203-2114, 571-218-4235.

More information regarding DARPA's public release process may be found at http://www.darpa.mil/NewsEvents/Public_Release_Center/Public_Release_Center.aspx.

6. **Export Control:** Per DFARS 204.7304, all procurement contracts and other transactions, as deemed appropriate, resultant from this solicitation will include the DFARS Export Control clause (252.204-7008).
7. **Electronic and Information Technology:** All electronic and information technology acquired through this solicitation must satisfy the accessibility requirements of Section 508 of the Rehabilitation Act (29 U.S.C. § 794d) and FAR 39.2. Each project involving the creation or inclusion of electronic and information technology must ensure that: (1) Federal employees with disabilities will have access to and use of information that is comparable to the access and use by Federal employees who are not individuals with disabilities, and (2) members of the public with disabilities seeking information or services from DARPA will have access to and use of information and data that is comparable to the access and use of information and data by members of the public who are not individuals with disabilities.

- 8. Employment Eligibility Verification:** Per FAR 22.1802, recipients of FAR-based procurement contracts must enroll as Federal contractors in E-verify¹¹ and use the system to verify employment eligibility of all employees assigned to the award. All resultant contracts from this solicitation will include the clause at FAR 52.222-54, "Employment Eligibility Verification." This clause will not be included in grants, cooperative agreements, or OTAs.
- 9. Reporting Executive Compensation and First-Tier Subcontract Awards:** Per FAR 4.1403, FAR-based procurement contracts valued at \$25,000 or more will include the clause at FAR 52.204-10, "Reporting Executive Compensation and First-Tier Subcontract Awards." A similar award term will be used in grants, cooperative agreements, and other transactions. This clause is not required in classified contracts.
- 10. Updates of Information Regarding Responsibility Matters:** Per FAR 9.104-7(c), FAR clause 52.209-9, "Updates of Publicly Available Information Regarding Responsibility Matters," will be included in all contracts valued at \$500,000 or more, where the contractor has current active Federal contracts and grants with total value greater than \$10,000,000.
- 11. Representation by Corporations Regarding Unpaid Delinquent Tax Liability or a Felony Conviction under Any Federal Law:** In accordance with the Consolidated Appropriations Act, 2012 (Public Law 112-74), none of the funds made available by that Act may be used to enter into a contract with any corporation that: (1) has any unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted or have lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability, unless the agency has considered suspension or debarment of the corporation and made a determination that this further action is not necessary to protect the interests of the Government; or (2) was convicted of a felony criminal violation under any Federal or State law within the preceding 24 months, where the awarding agency is aware of the conviction, unless the agency has considered suspension or debarment of the corporation and made a determination that this action is not necessary to protect the interests of the Government. Each proposer must complete and return the representations outlined in Section IV.B.1.k(viii) with their proposal submission.
- 12. Cost Accounting Standards Notices and Certification:** Per FAR 52.230-2, amended by Deviation 2012-00003 (January 2012), any procurement contract in excess of \$700,000 resulting from this solicitation will be subject to the requirements of the Cost Accounting Standards (CAS) Board (48 CFR 99), except those contracts which are exempt as specified in 48 CFR 9903.201-1. Any proposer who submits a proposal which, if accepted, will result in a CAS compliant contract, must include a Disclosure Statement as required by 48 CFR 9903.202. The disclosure forms may be found at http://www.whitehouse.gov/omb/procurement_casb.

¹¹<http://www.uscis.gov/e-verify>

13. Controlled Unclassified Information (CUI) on Non-DoD Information Systems: CUI refers to unclassified information that does not meet the standard for National Security Classification but is pertinent to the national interests of the United States or to the important interests of entities outside the Federal Government and under law or policy requires: (1) protection from unauthorized disclosure; (2) special handling safeguards; or (3) prescribed limits on exchange or dissemination. All non-DoD entities doing business with DARPA are expected to adhere to the following procedural safeguards, in addition to any other relevant Federal or DoD specific procedures, for submission of any proposals to DARPA and any potential business with DARPA:

- Do not process DARPA CUI on publicly available computers or post DARPA CUI to publicly available webpages or websites that have access limited only by domain or Internet protocol restriction.
- Ensure that all DARPA CUI is protected by a physical or electronic barrier when not under direct individual control of an authorized user and limit the transfer or DARPA CUI to subcontractors or teaming partners with a need to know and commitment to this level of protection.
- Ensure that DARPA CUI on mobile computing devices is identified and encrypted and all communications on mobile devices or through wireless connections are protected and encrypted.
- Overwrite media that has been used to process DARPA CUI before external release or disposal.

C. Reporting

The number and types of technical and financial reports required under the contracted effort will be specified in the award document, and will include, as a minimum, monthly financial status reports and a yearly status summary. The reports shall be prepared and submitted in accordance with the procedures contained in the award document. A final report that summarizes the project and tasks will be required at the conclusion of the performance period for the award.

D. Electronic Systems

1. System for Award Management (SAM) Registration and Universal Identifier

Requirements: Unless the proposer is exempt from this requirement, as per FAR 4.1102 or 2 CFR 25.110, as applicable, all proposers must be registered in the SAM and have a valid Data Universal Numbering System (DUNS) number prior to submitting a proposal. All proposers must provide their DUNS number in each proposal they submit. All proposers must maintain an active SAM registration with current information at all times during which they have an active Federal award or proposal under consideration by DARPA. DARPA cannot make an award unless the proposer has provided a valid DUNS number and has an active SAM registration with current information. Information on SAM registration is available at <http://www.sam.gov>.

2. **Representations and Certifications:** In accordance with FAR 4.1201, prospective proposers shall complete electronic annual representations and certifications at <http://www.sam.gov>.
3. **Wide Area Work Flow (WAWF):** Performers are required to submit invoices for payment directly at <https://wawf.eb.mil>. WAWF registration is required prior to any award under this solicitation.
4. **i-Edison:** The award document for each proposal selected for funding will contain a requirement for patent reports and notifications to be submitted electronically through the i-Edison Federal patent reporting system at <http://s-edison.info.nih.gov/iEdison>.
5. **Technical – Financial Information Management System (T-FIMS):** Financial and Technical status reports must be submitted electronically at <https://www.tfims.darpa.mil>.

VII. AGENCY CONTACTS

DARPA will use email for all technical and administrative correspondence regarding this solicitation.

- Technical POC: Dr. Kathleen Fisher, Program Manager, DARPA/I2O
- Email: PPAML@darpa.mil
- Mailing address:
DARPA I2O
ATTN: DARPA-BAA-13-31
675 North Randolph Street
Arlington, VA 22203-2114
- I2O Solicitation Website:
http://www.darpa.mil/Opportunities/Solicitations/I2O_Solicitations.aspx

VIII. OTHER INFORMATION

A. Frequently Asked Questions (FAQs)

Administrative, technical, and contractual questions should be sent via email to PPAML@darpa.mil. All questions must include the name, email address, and the telephone number of a point of contact.

DARPA will attempt to answer questions in a timely manner; however, questions submitted within 7 days of closing may not be answered. If applicable, DARPA will post FAQs to http://www.darpa.mil/Opportunities/Solicitations/I2O_Solicitations.aspx.

B. Proposers' Day

The Proposers' Day will be held on April 10, 2013, in Arlington, VA.

Interested parties must register at <http://www.solers.com/BAAinfo-reg/ppaml> no later than COB on April 5, 2013.

Materials presented at the Proposers' Day, as well as a frequently asked questions (FAQ) document, compiling questions and answers received to date, will be made available at http://www.darpa.mil/Opportunities/Solicitations/I2O_Solicitations.aspx.

The purpose of the PPAML Proposers' Day is threefold:

1. To familiarize participants with DARPA's interest in innovative approaches to advancing machine learning by using probabilistic programming.
2. To identify potential proposers and promote understanding of the anticipated PPAML BAA proposal requirements.
3. To promote discussion of synergistic capabilities among potential program participants.

The PPAML Proposers' Day will be recorded, and a copy of the video will be posted on DARPA's website after the Proposers' Day.

Individuals interested in participating in the PPAML program may give presentations during the afternoon session to publicize their capabilities and solicit teaming. Presentations will be limited to two minutes in length and a single content slide. Presenters should note their intent to provide a presentation when registering for the Proposers' Day. Presentation slides should be submitted to PPAML@darpa.mil by April 5, 2013.

For further information regarding the PPAML Proposers' Day, please reference DARPA Special Notice 13-30 (DARPA-SN-13-30), which was posted to the Federal Business Opportunities website on March 18, 2013.

C. Submission Checklist

The following items apply prior to proposal submission:

✓	Item	BAA Section	Applicability	Comment
	Obtain DUNS number	IV.B.1.a	Required on proposal cover page	http://fedgov.dnb.com/webform/index.jsp The DUNS Number is the Federal Government's contractor identification code for all procurement-related activities.
	Enroll in the System for Award Management (SAM)	VI.D.1.	Required of all proposers	www.sam.gov The SAM combines federal procurement systems and the Catalog of Federal Domestic Assistance into one new system. SAM currently includes the functionality from the following systems: * Central Contractor Registry (CCR) * Federal Agency Registration (Fedreg) * Online Representations and Certifications Application (ORCA) * Excluded Parties List System (EPLS)
	Obtain Taxpayer Identification Number (TIN)	IV.B.1.a	Required on proposal cover page	http://www.irs.gov/businesses/small/international/article/0,,id=96696,00.html A TIN is used by the Internal Revenue Service in the administration of tax laws.
	Obtain CAGE code	IV.B.1.a	Required on proposal cover page	http://www.dlis.dla.mil/CAGESearch/cage_faq.asp A CAGE Code identifies companies doing or wishing to do business with the Federal Government.
	Enroll in E-Verify	VI.B.8	Applies to FAR-based contracts, not to grants, cooperative agreements, or other transactions	http://www.uscis.gov/e-verify E-Verify is a web-based system that allows businesses to determine the eligibility of their employees to work in the United States.
	Ensure representations and certifications are up to date	VI.D.2	Required of all proposers	http://www.sam.gov Federal provisions require entities to represent/certify to a variety of statements ranging from environmental rules compliance to entity size representation.
	Ensure eligibility of all team members	III	Required of all proposers (primes and subcontractors)	Verify eligibility, as applicable, for FFRDCs, Government entities, organizational conflict of interest

The following items apply as part of the submission package:

✓	Item	BAA Section	Applicability	Comment
	Encryption password	IV.D.2.a	Required of proposers using the DARPA/I2O electronic web-based BAA submission system. Does not apply to proposers using grants.gov	Email to PPAML@darpa.mil
	Volume 1 (Technical and Management)	IV.B.1	Required of all proposers	Limited to 16 pages for technical portion (Executive Summary, Goals and Impact, and Technical Plan) plus 7 pages if a second Technical Area is proposed. Management Plan, Capabilities, SOW, Schedule and Milestones, and Cost Summary make take an additional 5 pages.
	Appendix A	IV.B.1.k	Required of all proposers	<ul style="list-style-type: none"> -Team member identification - Government/FFRDC team member proof of eligibility - Organizational conflict of interest affirmations - Intellectual property - Human use - Animal use - Subcontractor plan - Unpaid delinquent tax liability/felony conviction representations -CASB disclosure
	Appendix B	IV.B.1.l	Optional	May include links to relevant papers, reports or resumes
	Volume 2 (Cost)	IV.B.2	Required of all proposers	<ul style="list-style-type: none"> - Cover Sheet - Cost summary by year - Detailed cost information by task/month <ul style="list-style-type: none"> – include costs for direct labor, indirect costs/rates, materials/equipment, subcontractors/consultants, travel, other direct costs – Justification for labor costs, categories and hours - Cost spreadsheet file (.xls or equivalent format) - List of milestones for 845 OTA agreements - Subcontractor cost proposals - Consultant agreements, teaming agreements or letters of intent - Itemized list of material and equipment items to be purchased - Vendor quotes or engineering estimates for material and equipment more than \$50,000 - Travel cost estimate to include purpose, departure/arrival destinations, and sample airfare -if applicable, SF 1408